

REMARKS

The Office Action of July 14, 2003 was received and carefully reviewed. Pursuant to 37 C.F.R. 1.121 (Effective July 30, 2003), claim 20 has been amended to correct the dependency and a complete listing of all claims in the application is set forth above. Reconsideration and withdrawal of the currently pending rejections is requested for the reasons advanced in detail below.

Initially, the Applicant traverses the Examiner's rejection, under 35 U.S.C. § 112 (second paragraph), of claims 13, 16, 17 and 21-30 as being indefinite (and failing to particularly point out and distinctly claim the subject matter regarded as the invention) in the use of the "ill-defined" claim term "providing" a "pair of first and second electrodes" in the claimed method. The Examiner states that the change in scope of the claims, asserted by the Applicant in the Amendment After Final of May 3, 2002, by replacing the term "preparing" with the new term "providing" makes the claims indefinite. The Examiner asserts that the indefiniteness is because he is of the opinion that there is no difference in scope between claims containing either of the two terms.

However, such a position and reasoning is inconsistent with requirements of § 112 (second paragraph) as set forth in MPEP Chapter 2173.02 which necessitates that the Examiner must view the terms of the claims in light of the application disclosure as well as in light of interpretations which one of ordinary skill in the pertinent art would possess for the claim terms. Using these criteria, the use of the term "providing" in the instant claims is clearly understood from a reading of the specification at page 8, line 1, to page 13, line 15, which states that a number of components of the apparatus used in the described method are "provided", and particularly states that the conductive nozzle 11 (i.e., second electrode of the claims) is "provided." This criteria alone provides the necessary clarity to the claimed invention with regard to the use of the term "providing."

Notwithstanding the above basis and support for the “providing” term, it is further noted, pursuant to MPEP Chapter 2111.01, that claim terms are given their “plain meaning” by one of ordinary skill in the pertinent art if a claim term is not defined by the specification. For the instant claims, the term “providing” (even if not discussed in the specification) would be given the “plain meaning” by one of ordinary skill in the prior art. Since, according to Webster’s Unabridged Dictionary, Second Edition (Dec. 2000), the term “providing” is derived from the root word “provide” which means “to make available; furnish...to supply or equip...” and is synonymous with “provided” then the use of the term “providing” in the instant claims would be regarded to mean “making” (“supplying”, “furnishing”) the first and second electrodes by one of ordinary skill in the pertinent art which is exactly what the above referenced portion of the specification teaches to one of ordinary skill in the prior art. Finally, it is noted that the word “preparing,” according to Webster’s Unabridged Dictionary, is derived from the root word “prepare” meaning “to put in proper condition...to manufacture...to lead up to...to put things on oneself...” which clearly does not have the same meaning (scope) as the more accurate term “providing” used in the instant claims and described in the specification. For the above reasons, the Examiner’s rejection, under § 112 (second paragraph), of claims 13, 16, 17 and 20-31 is deemed improper and must now be withdrawn.

With regard to the grounds of rejection of:

Claims 13, 16, 17, 21, 23-26 and 28-30, under 35 U.S.C. 103(a), as being obvious in view of the teachings of Sherman (‘367), and

Claims 22 and 27, under 35 U.S.C. 103(a), as being obvious in view of the teachings of Sherman (‘367) in view of Tanaka et al. (‘381), for the reasons of record in Paper No. 45,

each of these rejections is respectfully traversed

Specifically, the invention of claim 13 (and the other independent claims 16, 17, 21 and 26), is directed generally to a method of vapor reaction, including, *inter alia*, the steps of:

providing a pair of first and second electrodes within a reaction chamber, said pair of electrodes being arranged substantially in parallel with each other;

placing a substrate in the reaction chamber on said first electrode so that a first surface of said substrate faces toward said second electrode;

introducing a first film forming gas into said reaction chamber through said second electrode;

exciting said first film forming gas in order to form a first insulating film by first vapor deposition on said substrate placed in said reaction chamber;

introducing a second film forming gas into said reaction chamber through said second electrode;

exciting said second film forming gas in order to form a second insulating film by a second vapor deposition on said first insulating film in said reaction chamber wherein said first and second insulating films contact each other;

removing said substrate from said reaction chamber after the formation of the first and second insulating films;

introducing a cleaning gas comprising nitrogen fluoride into said reaction chamber through said second electrode;

exciting said cleaning gas in order to remove unnecessary layers caused the first and second vapor depositions from an inside of the reaction chamber,

wherein one of the first and second insulating films comprises silicon nitride and the other one of the first and second insulating films comprises a different material from said one of the first and second insulating films. (Emphasis added)

Such a method permits the cleaning of the formed film from the reaction chamber by using the cleaning gas (e.g., nitrogen fluoride) very effectively because the cleaning gas will travel in the same manner as the film forming gas introduced through the same electrode.

In contrast to this method, a review of the teachings of Sherman ('367) reveals that the patentee teaches an apparatus and method which does not include the highlighted features above. Specifically, Sherman desires to improve the removal of deposits onto the interior of a reaction chamber utilizing a unique, "separate,

substantially enclosed, internal plasma generator chamber or reactor 30” which is to be provided inside a conventional reaction chamber 40 (see column 6, lines 31-39; Figures 2 or 4). This unique chamber is shown to have several designs (Figures 3A, 3B, 3C, 7, elements 30A, 30B, 30C, 30D) which when employed in the conventional pancake-type reactor extends into the reaction chamber through a central opening within the electrode or substrate holder 23 which supports the substrates. Particularly important in the teachings of Sherman is the requirement (see column 4, lines 17-33) that the cleaning gases, i.e., NF_3 , are injected into the reaction space through the novel, substantially enclosed, internal plasma generator chamber or reactor 30A, 30B, or 30C, via gas line 48; while the plasma CVD coating gases are injected into the reaction space through the other electrode 25A (positioned above and spaced from the electrode or substrate holder 23) via line 47.

Therefore, Sherman does not specifically teach or suggest the claimed method steps highlighted above since the cleaning gas is not injected into the reaction space via the same electrode that is used to inject the plasma CVD gases for coating the substrates. Additionally, nowhere does Sherman suggest injecting the cleaning gases through other electrode 25A since to perform such a step would negate the use of the unique inventive electrode substantially enclosed, internal plasma generator chamber or reactor 30 A, 30B, or 30C. Further, there is no teaching or suggestion in Sherman to re-position the unique inventive electrode unique inventive electrode substantially enclosed, internal plasma generator chamber or reactor 30 A, 30B, or 30C to be on the second electrode from which the film forming gases are distributed.

Notwithstanding the illustration that the conduits 47 and 48 are shown (Figure 4) to be connected to all the gas containers, the explicit teaching of Sherman (see column 4, lines 17-33) is that the unique inventive electrode be positioned on the first electrode supporting the substrates and the cleaning (etching) gas be distributed through the unique inventive electrode. The Examiner’s proposal that providing the cleaning gas through either or both of the electrodes “depending on where the dirty parts were observed” would be obvious to one of ordinary skill in the prior art is based

not upon any teaching of the prior art of record, but instead is based upon the Applicant's disclosure which is not permitted when attempting to establish a *prima case* of obviousness.

As the Examiner is well aware, modifications to a prior art reference which would render the prior art unsatisfactory for its intended purpose or alter the very nature of the prior art operation are not permitted in order to establish a case of *prima facie* obviousness of a prior art reference. See MPEP Chapter 2143.01 sections entitled **"THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE"** and **"THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE."**

For the instant claims, the alternative embodiment (distributing the cleaning gas through the second electrode) asserted by the Examiner's rejection to be taught by Sherman simply does not exist in Sherman disclosure. Nor is the embodiment (above) suggested to one of ordinary skill in the prior art since such an embodiment would avoid the use of the novel substantially enclosed, internal plasma generator chamber or reactor 30 A, 30B, or 30C which is taught by the patentee to be positioned in the electrode or substrate holder 23 and provide substantially improved cleaning over conventional (Figure 2) plasma deposition.

Finally, a detailed review of the Tanaka et al reference, cited to allegedly teach the benefits of adding ultraviolet light means to the apparatus of Sherman, reveals that the patentees do not set forth any teaching or suggestion that would remedy the deficiencies of Sherman that have been discussed above. Therefore, since Sherman alone does not teach or suggest each and every feature of the claimed invention and since neither Sherman, Tanaka et al, or Examiner provide any suggestion/motivation to modify the basic and novel teachings of Sherman to arrive at the presently claimed invention without destroying or rendering unsatisfactory of its intended purpose the basic principle of operation of the Sherman disclosure, the rejection of claims 13, 16,

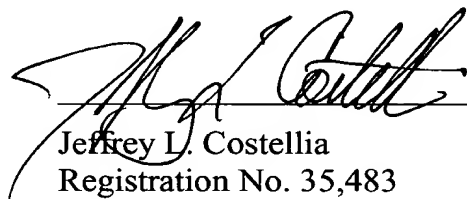
17, 21, 23-26 and 28-30, under § 103(a), as being obvious in view of the teachings of Sherman, and the rejection of claims 22 and 27, under § 103(a), as being obvious in view of the teachings of Sherman and Tanaka et al. are believed to have been set forth in error and must now be withdrawn.

In view of the foregoing, it is respectfully requested that claims 13, 16, 17 and 20-31 be allowed and that the application be passed to issue. If a conference would expedite prosecution of the instant application, the Examiner is hereby invited to telephone the Applicant's representative to arrange such a conference.

Lastly, it is noted that a separate Extension of Time Petition (one month) accompanies this response along with payment of the requisite extension of time fee. However, should that petition become separated from this response, then this response should be construed as containing such a petition. Likewise, any overage or shortage in the required payment should be applied to Deposit Account No. 19-2380 (740756-1717).

Respectfully submitted,

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